EOS PROTOTYPE OPERATIONAL INSTRUMENTS

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EOS PROTOTYPE OPERATIONAL INSTRUMENTS

- **Objectives**
  - **Examine Alternatives and Associated Costs for Near Real-Time Delivery of POI Data to NOAA**
  - **Examine Utilization of POI Data by NOAA in Meeting Warning and Forecast Mission**
  - **Examine POI Instruments as Precursor to NPOES Instrument Suite**

EOS PROTOTYPE OPERATIONAL INSTRUMENTS

- **EOS TERRA (AM-1) Mission**
  - **MODIS**
- **EOS AQUA (PM-1) Mission**
  - **MODIS**
  - **AIRS**
  - **AMSR**
- **EOS AURA (CHEM) Mission**
  - **HIRDLS**

EOS PROTOTYPE OPERATIONAL INSTRUMENTS

- **Concept**
  - **NOAA Equipment at EDOS**
  - **Network Connection to Rate Buffered Data**
  - **Level 1b and Level 2 Ocean Color Production at GSFC, Distribution at NOAA**
  - **Level 1b and 2 Atmospheric Production at GSFC, Distribution at NOAA**
  - **Level 1b and 2 Snow/Ice and Volcano Alert Production at GSFC, Distribution at NOAA**

EOS POI PROCESSING

- Hardware
  - Origin 2000 - 32 CPUs (R10K)
  - 500 GB RAID Storage
  - O2 Control Terminal
- Communications
  - GSFC Networks - Move Rate Buffered Data at 100Mbps
  - GSFC to NOAA - Move L1 and L2 on 10Mbps Service
  - NOAA Networks – Product Distribution

EOS POI PRODUCTS

- Atmospheric
  - SSEC Derived Products
  - Precipitation
  - Aerosol
  - Clouds
- Ocean
  - Water Leaving Radiance
  - Chlorophyll
  - Turbidity
- Land
  - Snow
  - Volcano Alert

EOS POI PRODUCTS

- **PGE 03 Level 2 Cloud Masks/Profiles**

  Produces atmospheric products needed by other MODIS processes. These products are Cloud Masks, Spectral Test Results, Joint Atmosphere Product of Profiles, Total Column Ozone, Water Vapor, Stability Indices, and Volcano Alert.

- **PGE 04 Level 2 Atmosphere**

  Produces the day-only atmosphere aerosol product and the total precipitable water vapor which is produced both during the day and at night.

- **PGE06 Level 2 Clouds**

  Produces the L2 cloud product and the QC files for Cloud Top Algorithm. Cirrus Detection Algorithm, and Cloud Optical Depth Algorithm.

- **PGE07 Level 2 Snow**

  Produces the L2 Snow Cover product which is a day-only land product, and the Land MODAPS QA product.

- **PGE 08 Level 2 Sea Ice**

  Produces the L2 sea ice product and the Land MODAPS QA product.

- **PGE 09 Level 2 Ocean Color**

  Produces the MODIS Ocean-color L2 products.

- **PGE 10 Level 2 Sea Surface Temperature**

  Produces the SST L2 products.

EOS POI STATUS

- **MODIS Production**
  - **Rate Buffer to Level 0 Conversion in Production**
  - **All NOAA PGEs in Production**
  - **Selected Level 1 and Level 2 Data to NSC**
- **AIRS Production**
  - **Rate Buffer to Level 0 Conversion Under Development**
  - **Simulated AIRS Orbits from AMSU**
  - **Thinned Data Sets to NCEP**
- **Communications**
  - **100Mbps Internal LAN (EDOS)**
  - **10Mbps Link to NOAA**
  - **100Mbps Link to NSC**

EOS POI STATUS

- **Issues**
  - **Communications**
  - **Storage**
  - **Processors**
- **Next Steps**
  - **GigaBit Ethernet Between GSFC-NOAA-NSC**
  - **Additional Storage**
  - **Additional CPUs**

EOS POI CONFIGURATION

- **Global MODIS**
  - **32 CPUs (1 S/C)**
  - **64 CPUs (2 S/C)**
  - **1TB Storage**
  - **GigaBit Ethernet**
- **Global AIRS**
  - **32 CPUs**
  - **1 TB Storage**
  - **File Server**
  - **GigaBit Ethernet**

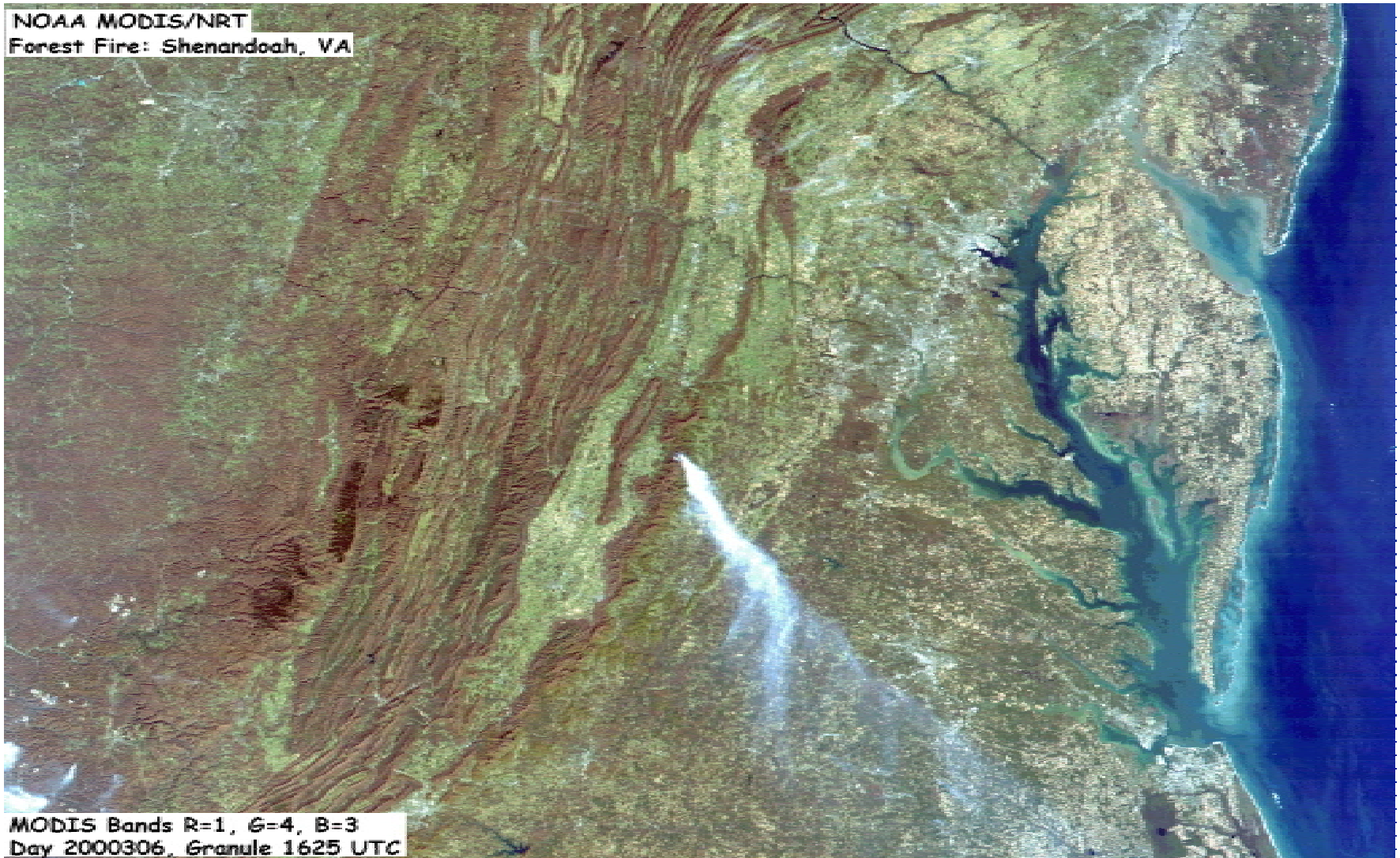
EOS POI CONFIGURATION COST ESTIMATES

- **Global MODIS**
  - **32 CPUs ($750K)**
  - **64 CPUs ($1.5M)**
  - **1 TB Storage**
  - **GigaBit Ethernet**
- **Global AIRS ($250K)**
  - **32 CPUs**
  - **1 TB Storage**
  - **File Server**
  - **GigaBit Ethernet**

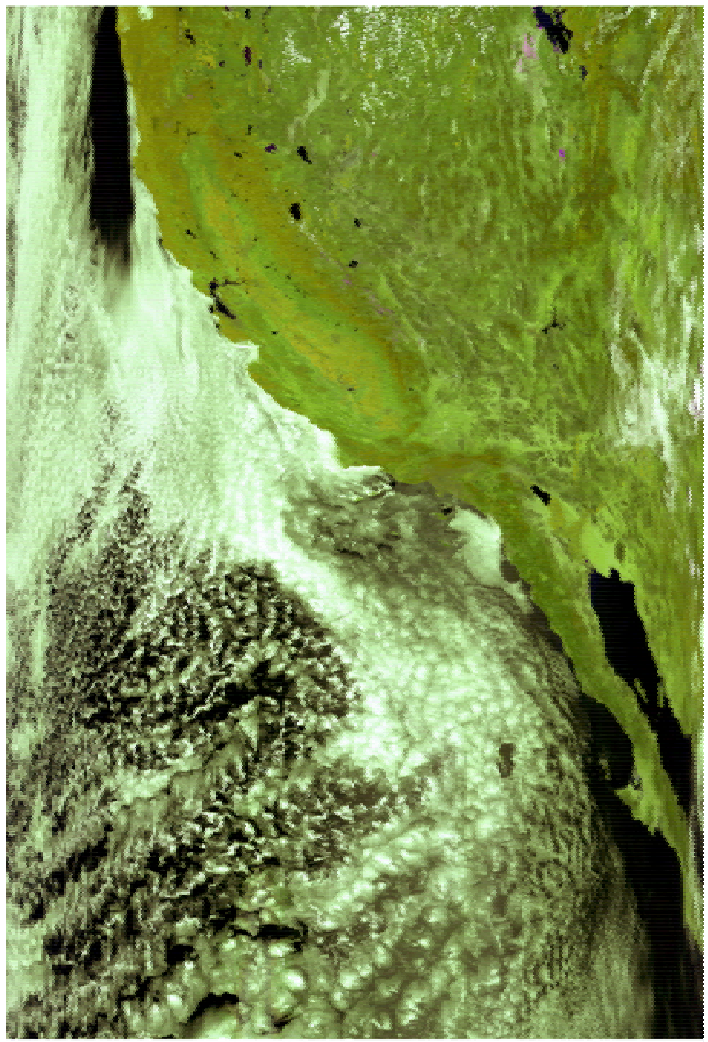
NOAA MODIS Applications

- **Natural Hazards**
  - **Fires**
  - **Volcanoes**
  - **Floods**
- **CoastWatch**
  - **Biological Monitoring (Red Tide)**
  - **Physical Monitoring (SST, Color)**
- **Regional NWS Forecasts**
  - **Visualization**
  - **Atmospheric Stability**
  - **Clouds**

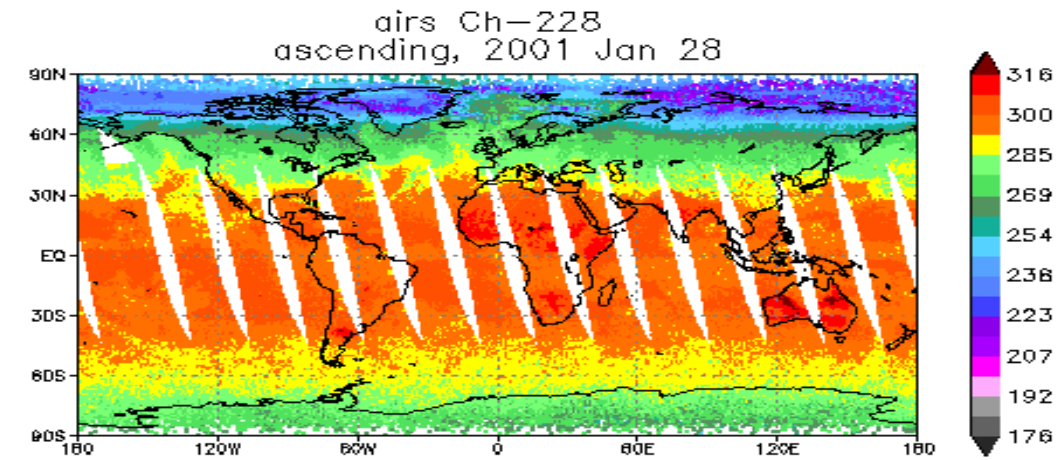
MODIS IMAGES

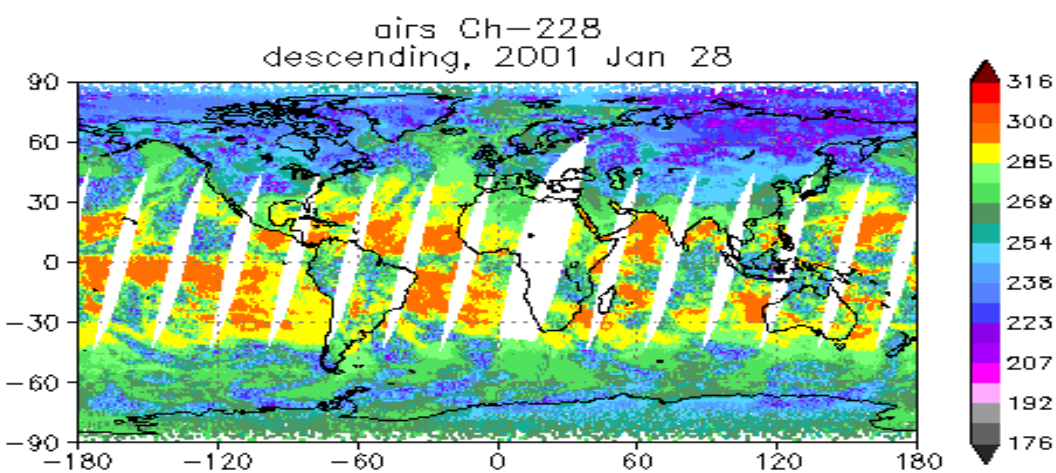


MODIS IMAGES



AIRS IMAGES


airs Ch-228
ascending, 2001 Jan 28
90N
60N
30N
EQ
30S
60S
90S
180
120W
60W
0
60E
120E
180
316
300
285
269
254
238
223
207
192
176

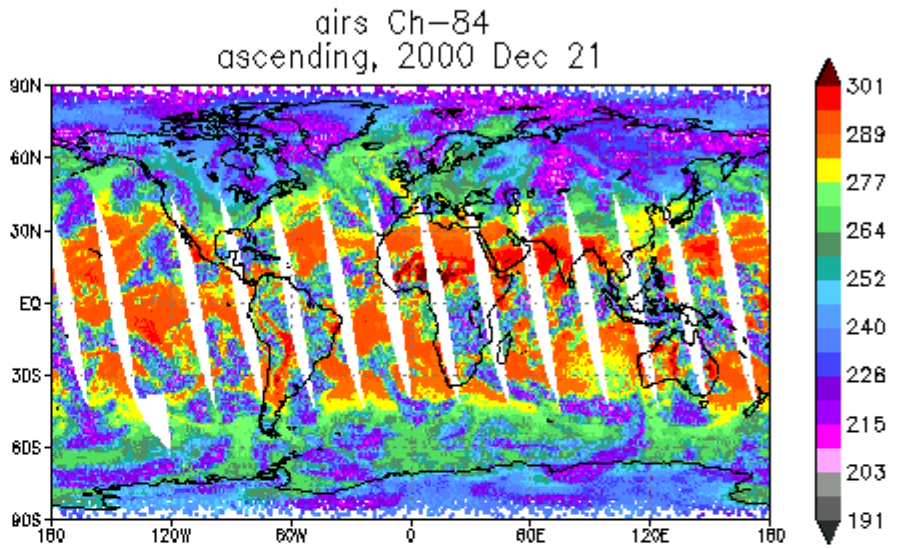

airs Ch-228
descending, 2001 Jan 28
90
60
30
0
-30
-60
-90
-180
-120
-60
0
60
120
180
316
300
285
269
254
238
223
207
192
176

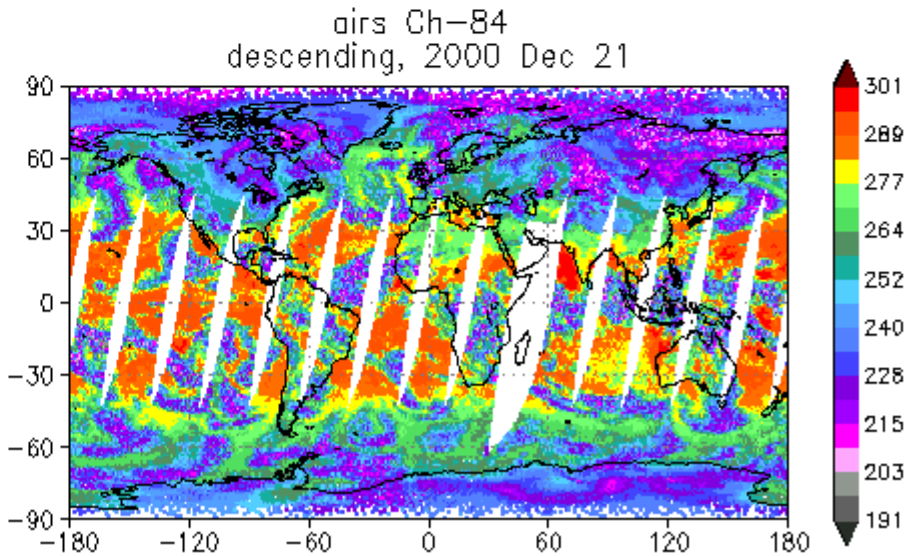
airs : 2000 Dec 21 airs Ch-84

Select to plot radiance vs. freq.

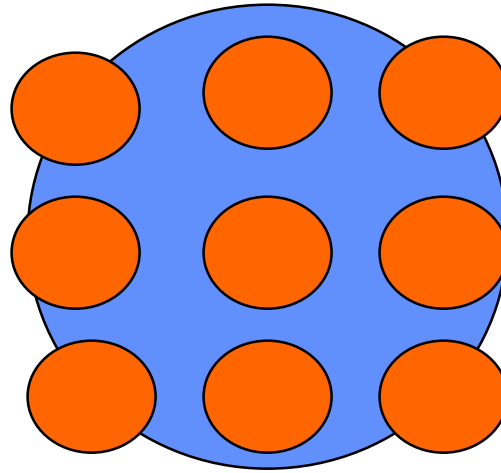
lonfrom:	140.0
lonto:	180.0
latfrom:	-5.0
latto:	5.0
freqfrom:	651.26
freqto:	2663.95
maxcscore:	500.
maxcoh:	5000.

Submit Reset





NWP Product files



- Thinned Radiance files (HDF and BUFR):
- 4 types: (include clear indicators)
  - a) clearest of 3 x 3 from every golf ball, 281 channels. + AMSU and HSB (20 mbytes per orbit)
  - b) eigenvector scores (amplitudes) using same decimation as a)
  - c) Every 7th golfball with 281 channels plus all AMSU and HSB
  - d) Full resolution AMSU and HSB

- Full resolution level 2 products – temperature, moisture and ozone.

MODIS/AIRS REFERENCE

- **MODIS Internal WEB Page**

  http://psbsgi2.nesdis.noaa.gov:1234/eospoi/modis/modismain.htm

- **AIRS ORA WEB Page**

  http://orbit-net.nesdis.noaa.gov/crad/st/airs_near_realtime/research